CLAIMS

What is claimed is:

1. A substrate processing method in which the surface of a substrate is dried by injecting it with dry gas consisting of a mixture of an organic solvent vapor and an inert gas, characterized in that the organic solvent vapor contains mists of submicron size.

2. A substrate processing method according to claim 1, characterized in that the dry gas consists of a mixture of inert gas and the organic solvent vapor, being formed by bubbling the inert gas in the organic solvent in a vapor generating unit,

wherein the temperature of the vapor generating unit is set at T_1, the temperature of the mixed gas containing the inert gas and the organic solvent is set at T_2 from the vapor generating unit to a jet nozzle, and the temperature of the dry gas emitted from the jet nozzle is set at T_3, and

the temperatures are controlled such that the following relationship holds:

$T_1 \leq T_2 \leq T_3$.

3. A substrate processing method according to claim 1, characterized in that the dry gas consisting of a mixture of inert gas and the organic solvent vapor is formed by bubbling the inert gas in the organic solvent in a vapor generating unit, and is further diluted with dilution gas of the same kind of inert gas,

wherein the temperature of the vapor generating unit is set at T_1, the temperature of the mixed gas is set at T_2' from the vapor generating unit until the mixed gas is diluted with the dilution gas, the temperature of the dilution gas is set at T_4, the temperature of the mixed gas containing the inert gas and the organic solvent is set at T_2" to the jet nozzle after the mixed

gas is diluted with the dilution gas, and the temperature of the dry gas emitted from the jet nozzle is set at T_3, and

the temperatures are controlled such that the following relationship holds:

$T_1 \leq T_2' \leq T_4 \leq T_2'' \leq T_3$.

4. A substrate processing method according to any one of claims 1 to 3, characterized in that the organic solvent is at least one kind selected from a group including isopropyl alcohol, diacetone alcohol, 1-methoxy-2-propanol, ethyl glycol, 1-propanol, 2- propanol, and tetrahydrofuran, and the inert gas is at least one kind selected from a group including nitrogen, argon, and helium.

5. A substrate processing apparatus including:

a vapor generating unit which generates a mixture of organic solvent vapor and an inert gas by bubbling the inert gas in an organic solvent;

support means for supporting a plurality of substrates to be vertically arranged in parallel at equal pitches;

a rinsing processing vessel which accommodates the plurality of substrates supported by the support means;

a lid for covering the upper opening of the rinsing processing vessel;

jet nozzles which are provided in the lid; and

first piping which allows the vapor generating unit and the jet nozzles to communicate with each other,

the substrate processing apparatus characterized in that the first piping and the jet nozzles are respectively equipped with heaters, and the heaters are controlled by means of dry gas containing organic solvent mists of submicron size being emitted from the jet nozzles.

6. A substrate processing apparatus according to claim 5, characterized in that the temperature of the vapor generating unit is set at

T_1, the temperature of the first piping is set at T_2, and the temperature of the jet nozzle is set at T_3, and

the temperatures are controlled such that the following relationship holds:

$T_1 \leq T_2 \leq T_3$.

7. A substrate processing apparatus according to claim 5, characterized in that the second piping is further included by being connected to the middle of the first piping for the purpose of supplying dilution gas of the same kind of inert gas,

wherein the temperature of the vapor generating unit is set at T_1, the temperature of the first piping is set at T_2' from the vapor generating unit to the point in which it is connected with the second piping, the temperature of the second piping is set at T_4, the temperature of the first piping is set at T_2'' from the point in which it is connected with the second piping to the said nozzle, and the temperature of the jet nozzle is set at T_3, and

the temperatures are controlled such that the following relationship holds:

$T_1 \leq T_2' \leq T_4 \leq T_2'' \leq T_3$.

8. A substrate processing apparatus according to claim 7, characterized in that a static mixer is provided downstream from the point of connection between the first piping and the second piping and upstream in respect of the jet nozzle.

9. A substrate processing apparatus according to any one of claims 5 to 8, characterized in that the organic solvent is at least one kind selected from a group including isopropyl alcohol, diacetone alcohol, 1-methoxy-2-propanol, ethyl glycol, 1-propanol, 2- propanol, and tetrahydrofuran, and the inert gas is at least one kind selected from a group including nitrogen, argon, and helium.